

ADDITION TO FLORA MESOAMERICANA: A NEW RECORD  
OF *THELYPTERIS* (THELYPTERIDACEAE)  
FOR CHIAPAS, MEXICO

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ABSTRACT

*Thelypteris rhachiflexuosa* Riba, described from Veracruz is recorded from Chiapas, where it was found in Northern Highlands. Additional data about distribution, habitat, and morphology are discussed.

RESUMEN

*Thelypteris rhachiflexuosa* Riba, descrito de Veracruz, es registrado para las Montañas del Norte de Chiapas. Se discute información sobre su distribución, hábitat y morfología.

INTRODUCTION

The genus *Thelypteris* comprises about 900 species—distributed around the world—with high diversity in the tropical and subtropical regions. One hundred thirty three (133) species have been recorded for Mesoamerica and about 50% of these are found in Chiapas (Smith 1995).

The Northern Highlands of Chiapas is one of the less well known areas from a botanical viewpoint (Breedlove 1981). Nevertheless, a few studies have been carried out in this area (Pérez & Sarukhán 1970; López-Mendoza 1980), and it has been considered one of the most important regions for endemic taxa (Schutzman et al. 1988; Went 1989, 1998). Unfortunately it is also one of the most altered places, due mainly to anthropogenic activities (cattle raising and sun coffee plantation). This has resulted in loss of both primary vegetation and floristic diversity.

During a floristic exploration of the tropical forests in the Northern Highlands in 1999, we collected several samples of ferns, among them a *Thelypteris* with a flexuose rachis and 2–4 pairs of alternate, undulate pinnae.

This specimen proved to be *Thelypteris rhachiflexuosa* Riba, previously known only from the region of Los Tuxtlas, Veracruz. This species was collected and described by Riba (1989) and recorded as endemic to Veracruz (Ibarra-Manríquez et al. 1997; Riba & Pérez-García 1997; Riba 1998).

Voucher specimen: **MEXICO. Chiapas:** Mpio. Amatlán, Mt. Palmar, 10 km E of Amatlán, Northern Highlands, 23 May 1999, 800 m, *Pérez-Farrera 1967*; (Herbarium of Escuela de Biología, UNICACH; CHIP) (Fig. 1). *Thelypteris rhachiflexuosa* is being grown in the Botanical Garden “Faustino Miranda” in the Instituto de Historia Natural under accession number 085.

In Chiapas this species occurs in “bosque tropical perennifolio” (tropical rain forest) according to Rzedowski (1978), or “selva alta perennifolia” (Miranda & Hernández-X. 1963). This vegetation is comprised of three strata. The first stratum is dominated by *Brosimum alicastrum* Sw., *Dialium guianense* (Aubl.) Sandw., *Manilkara zapota* (L.) Royen, *Guatteria anomala* R.E. Fries, *Calophyllum brasiliense* Camb., *Pouteria sapota* (Jacq.) H.E. Moore & Stearn, and *Pterocarpus hayensii* Hemsl. In the middle stratum are usually *Bursera simaruba* (L.) Sarg., *Pimenta dioica* (L.) Merrill, *Miconia trinervia* (Sw.) D. Don. ex Loud., *Oreopanax xalapensis* (Kunth) Decné & Pl., *Trophis racemosa* (L.) Urban, *Saurauia belizensis* Lundell, and *Dendropanax arboreus* (L.) Planch. & Decne. The third stratum or understory typically consists of *Astrocaryum mexicanum* Liebm., *Chamaedorea concolor* Martius, *Chamaedorea elegans* Martius, *Chamaedorea tepejilote* Liebm., *Chamaedorea arenbergiana* Wendl. *Desmoncus chinantlensis* Liebm. *Begonia nelumbiifolia* Cham. & Schlecht., *Anthurium pedatoradiatum* Schott, *A. schlechtendalii* Kunth. In addition, some epiphytes and hemiepiphytes are found in these habitats, e.g., *Monstera deliciosa* Liebm., *Anthurium pentaphyllum* (Aublet) G. Don. var. *bombacifolium* (Schott) Madison, and *Polypodium* sp. *Thelypteris rhachiflexuosa* is sometimes found in secondary vegetation or coffee plantations.

The soils in this area are red clay derived from lutitas (López-Mendoza 1980). The topography is abrupt, with steep slopes (70%). The landscape is karstic and the bedrock consists of a complex of Eocene and Oligocene marine limestone (López-Hernández 1994; Pérez & Sarukhán 1970). This species occurs at elevations from 600–800 m (Fig. 2).

#### DISCUSSION

*Thelypteris rhachiflexuosa* is in the subgenus *Goniopteris*. In Mesoamerica about 41 species are known in this subgenus, with about 34 species in Mexico (Yatskievych, pers. comm.), and approximately 17 in Chiapas (Smith 1995). There are still taxonomic problems at the species level.

This record for Chiapas extends the distribution of this species into Mesoamérica. This taxon has a distribution pattern similar to that of other woody species restricted to the Caribbean slope, an area including Los Tuxtlas, Veracruz and northern mountains of Chiapas (Wendt 1998). We expect that *T. rhachiflexuosa* will also be found in the State of Tabasco.

*Thelypteris rhachiflexuosa* is similar to *T. oroniensis* L.D. Gómez, endemic to Costa Rica, in its zig-zag rachis, but differs from that species in its meniscioid secondary veins. The specimen of *T. rhachiflexuosa* collected in Chiapas dif-



FIG. 1. Herbarium voucher *Thelypteris rhachiflexuosa* from Chiapas.



FIG. 2. Distribution of *Thelypteris rhachiflexuosa* in Chiapas.

fers slightly from the voucher collected in Veracruz in having more setulose sori. *Thelypteris rhachiflexuosa* sometimes grows with *Thelypteris ghiesbreghtii* (Hook.) C.V. Morton and differs from this species with regard to straight rachis, costae, veins and leaf tissue moderately to densely hairs below.

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*Note.*—The first and third authors would like dedicate this manuscript to the memory of Dra. Ramón Riba y Nava Esparza, who passed away three hours after checking the identity of this species.

## REFERENCES

- BREEDLOVE, D. 1981. Introduction to flora of Chiapas. California Academy of Science Press. California U.S.A.
- IBARRA-MANRÍQUEZ G., M. MARTÍNEZ-RAMOS, R. DIRZO, and J. NUÑEZ-FARFÁN. 1997. La vegetación. In: GONZÁLEZ S., E.R. DIRZO and R. VOGT, eds. Historia Natural de los Tuxtlas. Universidad Nacional Autónoma de México. México, D.F.
- LÓPEZ-MENDOZA, R. 1980. Tipos de vegetación y su distribución en el estado de Tabasco y norte de Chiapas. Cuadernos Universitarios . Ser. Agronomía 1. Chapingo, México.
- LÓPEZ-HERNÁNDEZ, E.S. 1994. La vegetación y la flora de la sierra de Tabasco. Universidad Juárez Autónoma de Tabasco, México, Villahermosa Tabasco.
- MIRANDA F. and E. HERNÁNDEZ X. 1963. Los tipos de vegetación de México y su clasificación . Bol. Soc. Bót. México 28:20–179.
- PÉREZ J. A. and J. Sarukhán . 1970. La vegetación de la Región de Pichucalco, Chiapas, Inst. Natl. Inv. For. Pub. Esp. 5: 13–48.
- RIBA, R. 1989. A new species of *Thelypteris* subg. *Goniopteris* from the State of Veracruz, México. Amer. Fern. J. 79:122–124
- RIBA, R. and B. PÉREZ-GARCÍA. 1997. Pteridofitas. In: González S., E.R. Dirzo and R. Vogt, eds. Historia Natural de los Tuxtlas. Universidad Nacional Autónoma de México. México, D.F.
- RIBA, R. 1998. Pteridofitas mexicanas: distribución y endemismo. In: Ramamoorthy T.P., R. Bye, A. Lot y J. Fa, eds. Diversidad biológica de México: orígenes y distribución. Universidad Nacional Autónoma de México, México, D.F.
- RZEDOWSKI, J. 1978. La vegetación de México. Ed. Limusa, México, D.F.
- SCHUTZMAN, B., A.P. VOVIDES, and B. DEHGAN. 1988. Two new species of *Zamia* (Zamiaceae, Cycadales) from Southern Mexico. Bot. Gaz. 149:347–360.
- SMITH, A.R. 1995. Thelypteridaceae. In: R.C. Moran and R. Riba, eds. Pteridofitas. Flora Mesoamericana. Vol. I. Psilotaceae a Salviniaceae. Universidad Nacional Autónoma de México. México D.F.
- WENDT, T. 1989. Las selvas de Uxpanapa, Veracruz-Oaxaca, México: evidencia de refugios florísticos cenozoicos. Anales Inst. Biol. Univ. Nac. Autónoma México, Ser. Bot. 58:29–54.
- WENDT, T. 1998. Composición, afinidades florísticas y orígenes de la flora arbórea del dosel de los bosques tropicales húmedos de la vertiente mexicana del Atlántico. In: Ramamoorthy T.P., R. Bye, A. Lot y J. Fa, eds. Diversidad biológica de México: orígenes y distribución. Universidad Nacional Autónoma de México, México, D.F.